

Low Emissions Technology Demonstration Fund (LETDF) Round 1

Details of projects being funded under the LETDF follow:

Chevron (TAPL) Pty Ltd: Gorgon carbon dioxide (CO₂) Injection Project

Proponent: Chevron will be working with Shell Development Australia Pty Ltd and Mobil Australia Resources Company Pty Ltd as joint venture partners.

Location: The project is part of the Gorgon development off the northwest coast of Western Australia. It includes the injection of carbon dioxide into the Dupuy Formation saline aquifer underneath Barrow Island.

Project description: The Gorgon CO₂ Injection Project is a commercial-scale demonstration project comprising three components:

- the capture of carbon dioxide from reservoir gas from the gas stream of the Gorgon development, compression and dehydration of the CO₂ and its transportation by pipeline to the injection site;
- injection of the CO₂ into the Dupuy Formation saline aquifer under Barrow Island; and
- monitoring of the injected CO₂ to ensure it is safe in terms of health, safety and the environment.

Carbon sequestration technology is being applied by the oil and gas industry worldwide. However, an unusual feature of this project is that CO₂ will be injected into a low permeability saline aquifer, rather than into an existing depleted oil or gas reservoir.

The project will be the world's largest geological sequestration project of this type. The injection of CO₂ is expected to start in 2009. Over its 40 year lifetime, the project anticipates removing about 3 million tonnes per annum of reservoir CO₂.

Cost and funding: The total project cost is \$841.3 million. The Australian Government is contributing \$60 million.

CS Energy: Oxy-firing demonstration and carbon sequestration project

Proponent: CS Energy's partners in the oxy-firing project are a Japanese consortium comprising JCoal, JPower and IHI; the Australian Coal Association and Xstrata Coal; Schlumberger – a world leader in geosequestration technology; the CO2CRC and the CRC for Coal in Sustainable Development.

Location: The project will be implemented using the Callide A power station at Biloela in central Queensland.

Project description: CS Energy Ltd. will retrofit a set of new technologies into an existing coal-fired power station in Queensland. The project involves four processes:

- oxygen production;
- the use of that oxygen in the oxy-firing of pulverised black coal;
- capture of all the gases resulting from combustion; and
- CO2 separation, liquefaction, transport and geological storage.

The demonstration project will store 30,000 tonnes per annum of carbon dioxide for up to three years. As a result of the oxy-firing combustion process, the technology will also reduce emissions of sulphur oxides and nitrogen oxides.

This project has already attracted several international partners since it provides an efficient way to deal with emissions from existing coal-fired plants.

Construction at Callide A is scheduled to commence in April 2007, followed by a five-year technology demonstration starting in late 2008.

Cost and funding: The total cost of the project is \$188 million. The Australian Government is contributing \$ 50 million.

HRL Limited: 400 MW IDGCC Clean Coal Demonstration Project

Proponent: HRL Limited (HRL) are partnering with Harbin Power Engineering Company Ltd (HPE). HPE is a subsidiary of one of the largest power equipment manufacturers and engineering service providers in China. HPE will be supplying and installing equipment and plant for the project.

HRL Limited is an unlisted Australian owned energy, technology and project development company. HRL are providing the Integrated Drying & Gasification Combined Cycle (IDGCC) Technology and design. HRL and

HPE will jointly manage the procurement, construction and operation of the project.

Location: The project demonstration will be implemented at the Loy Yang Bench in the La Trobe Valley, Victoria.

Project description: HRL have developed a new technology for integrated drying and gasification of moist reactive coals, including brown coal, to produce power at a higher efficiency than conventional power plants, with an estimated 30% lower cost of electricity production, 30% less CO₂ emissions, and 50% less water consumption. The technology has been proven at the 10 MW scale. This project is aimed at demonstrating the technology at full scale.

The Demonstration Project comprises the construction and commissioning of a 400 MW combined cycle clean coal power generation plant supplied by 2x200 MW gasifiers using HRL's IDGCC Technology. The technology is also suitable for carbon capture, with prospects for CO₂ removal prior to combustion.

The implementation phase of the project is expected to commence in mid 2007, the demonstration is expected to be completed by the end of 2009.

Cost and funding: The total cost of the project is \$750 million. The Australian Government is contributing \$100 million and the Victorian Government is contributing an additional \$50 million.

International Power: Hazelwood 2030

Proponent: International Power (Technologies) Pty Ltd was formed in March 2006 and is a 100% owned subsidiary of International Power (Australia) Holdings Pty Ltd. International Power is a global power generation and desalination company. Its headquarters are in the UK and it trades on the London and New York stock exchanges.

Location: The demonstration project will occur at the Hazelwood power station in the Latrobe Valley, Victoria.

Project description: International Power will introduce and demonstrate technology to dry brown coal that is used as the feedstock for one of the boilers at the Hazelwood power station. The use of dried brown coal will significantly reduce CO₂ emitted by the generating unit. Hazelwood has eight generating units and the company will consider applying the new technology to all units, if the demonstration project is successful.

The project will also include carbon capture and sequestration facilities. International Power will adapt internationally available technology for brown coal drying and carbon capture to local conditions. This technology can also be retrofitted to other brown coal plants in the LaTrobe Valley.

The coal drying demonstration phase of the project will be completed by the end of 2009. The carbon dioxide capture scheme is expected to be operational by early 2008.

Cost and funding: The total project cost is \$369 million. The Australian Government is contributing \$50 million and the Victorian Government an additional \$30 million.

Solar Systems Generation Pty Ltd: Large Scale Solar Concentrator Power Project

Proponent: Solar Systems Generation (Solar Systems) is a private Melbourne-based company that has spent over 15 years developing and proving solar concentrator power technology and established commercial solar power stations at four locations in Central Australia.

Location: The project will be positioned in North West Victoria.

Project description: Solar Systems Australia will build a zero-emissions 154MW solar concentrator power station in North-Western Victoria. It is expected that this will be the biggest and most efficient solar photovoltaic power station in the world.

The project involves a new generation of solar power technology called 'Heliostat Concentrator Photovoltaic' (HCPV) technology. This technology currently enables 1500 times more electricity generation from photovoltaic cells than the same area of conventional flat plate solar panels.

Delivery of the project will also mean significant scale up of manufacturing of high-tech plant components in Australia. Two new manufacturing facilities will be built for construction of this project and subsequent power stations expected to be ordered from Australia and overseas.

Cost and funding: The total project cost is \$420 million. The Australian Government is contributing up to \$75 million, and the Victorian State Government another \$50 million.